CLAIMS

1. A manufacturing method of a liquid crystal display device comprising two substrates sandwiching a liquid crystal having spontaneous polarization; and electrodes, formed on the substrates, for applying a voltage to the liquid crystal, the liquid crystal showing a monostable state in which an average molecular axis of a director of liquid crystal molecules is aligned in a single direction when no voltage is applied, said method comprising the steps of:

heating the liquid crystal; and

applying an electric field with electric field strength of not less than 2 V/μm in vicinity of a transition temperature from a higher temperature phase than chiral smectic C phase to the chiral smectic C phase in an alignment treatment which is performed to obtain the monostable state after heating.

2. The manufacturing method of a liquid crystal display device of claim 1,

wherein the electric field strength of the electric field is not less than 3 V/μm.

3. The manufacturing method of a liquid crystal display device of claim 1,

wherein a temperature range of the vicinity of the transition temperature includes a temperature range of ±2°C from

the transition temperature.

4. The manufacturing method of a liquid crystal display device of claim 1,

wherein the liquid crystal shows a phase sequence, either isotropic liquid phase – cholesteric phase – chiral smectic C phase, isotropic liquid phase – chiral nematic phase – chiral smectic C phase, or isotropic liquid phase – cholesteric phase – smectic A phase – chiral smectic C phase, from a high temperature side to a low temperature side.

5. A liquid crystal display device manufactured by the manufacturing method of a liquid crystal display device of claim 1, comprising alignment films formed on the two substrates, respectively, wherein rubbing directions of said alignment films are equal to each other.

6. The liquid crystal display device of claim 5,

wherein a pretilt angle of said alignment films is not more than 2°.

7. A liquid crystal display device manufactured by the manufacturing method of a liquid crystal display device of claim 1, comprising a back-light which is driven by a field-sequential color scheme, wherein a data-writing scanning voltage and a

data-erasure scanning voltage are applied between the electrodes.

8. A manufacturing method of a liquid crystal display device comprising a pixel substrate having pixel electrodes; a common substrate with a common electrode placed to face said pixel substrate; data lines for supplying a pixel voltage to be applied to said pixel electrodes; switching elements for controlling connection and disconnection between said pixel electrodes and said data lines by ON and OFF; scanning lines for supplying a control voltage for controlling ON and OFF of said switching elements; and a liquid crystal with spontaneous polarization sandwiched between said pixel substrate and said common substrate, wherein said liquid crystal shows a monostable state in which an average molecular axis of a director of liquid crystal molecules is aligned in a single direction when no voltage is applied, said method comprising the steps of:

heating the liquid crystal; and

applying the control voltage for turning on said switching elements to said scanning lines and applying a DC voltage to said data lines in vicinity of a transition temperature from a higher temperature phase than chiral smectic C phase to the chiral smectic C phase in an alignment treatment which is performed to obtain the monostable state after heating.

9. The manufacturing method of a liquid crystal display

device of claim 8,

wherein electric field strength to be applied to the liquid crystal by the DC voltage is not less than 2 V/μm.

10. The manufacturing method of a liquid crystal display device of claim 8,

wherein the control voltage for turning on the switching elements and the DC voltage are at equal potential.

11. The manufacturing method of a liquid crystal display device of claim 10,

wherein the potential of the control voltage and the DC voltage is lower than a potential of said common electrode.

12. The manufacturing method of a liquid crystal display device of claim 10,

wherein the potential of the control voltage and the DC voltage is zero.